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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Present Application:

Applicant	:	Ian James Rickards
Title	:	METHOD FOR ASPHALT COMPACTION AND COMPACTION APPARATUS
Docket No.	:	750036.401C1
Date	:	December 13, 2001

Prior Application:

Examiner	:	Gary Hartmann
Art Unit	:	3673
Application No.	:	09/269,003

Box Patent Application
Commissioner for Patents
U.S. Patent and Trademark Office
P.O. Box 2327
Arlington, VA 22202

PRELIMINARY AMENDMENT

Commissioner for Patents:

In accordance with a telephonic Examiner's Interview on July 2, 2001, applicant respectfully submits the following remarks and amendments to place the application in condition for allowance. Please amend the above-identified application as follows:

In the Specification:

Amend the specification by inserting a new section before the "Technical Field" as follows:

-- CROSS-REFERENCE TO RELATED APPLICATION

This application is a continuation of pending United States Patent Application No. 09/269,003, filed June 14, 1999. –

On page 1, line 2 after the "Cross-Reference to Related Application" section, please insert -- TECHNICAL FIELD --.

On page 1, line 12, before the paragraph beginning "Inherent in modern asphalt mix design..." please insert -- BACKGROUND OF THE INVENTION --.

On page 5, line 24, before the paragraph beginning "According to one aspect..." please insert -- SUMMARY OF THE INVENTION --.

On page 14, line 13, before the paragraph beginning "Various embodiments of methods..." please insert -- BRIEF DESCRIPTION OF THE DRAWINGS --.

On page 15, line 3, before the paragraph beginning "Referring to Figures 1 and 2..." please insert -- DETAILED DESCRIPTION OF THE INVENTION --.

In the Abstract:

Please replace the Abstract with the enclosed replacement Abstract of the Disclosure.

In the Claims:

Please cancel previously allowed claims 14, 15, 19, 21, 22, 25-32.

All of the pending claims have been provided for the Examiner's convenience.

Claims 1, 7, 12, 17, 20, 23, 24, and 33 have been amended as follows:

1. (Amended) A method of compacting a mat of hot mix asphalt which has been laid by an advancing asphalt paver, the method comprising advancing an asphalt compactor over the laid asphalt such that a compaction surface of the compactor, formed by a lower run of at least one belt, is engaged with any one portion of the mat for a period of at least 1.5 seconds and of less than about 60 seconds, the compaction surface applying a maximum average load stress to the mat of less than about 50 kPa and greater than about 10 kPa.

2. A method according to claim 1, wherein the asphalt compactor is advanced over the laid asphalt substantially at the rate of advancement of the asphalt paver and within about 50 m behind the asphalt paver.

3. A method according to claim 2, wherein the asphalt compactor is advanced substantially at the rate of the asphalt paver within about 2 m behind the asphalt paver.

4. A method according to claim 2 wherein the asphalt compactor is connected to and advanced by the asphalt paver.

5. A method according to claim 2 wherein the distance between the asphalt paver and the asphalt compactor is controlled via relative location sensor means.

6. A method according to claim 2, wherein the asphalt paver travels at a speed of from about 0.05 to about 0.15 m/s.

7. (Amended) A method according to claim 6 wherein the asphalt paver travels at a speed of about 0.1 m/s.

8. A method according to claim 1, wherein the compactor is displaced over the mat at a rate of no more than about 0.7 m/s.

9. A method according to claim 1 wherein the rate of compaction is from about 0.6 m/s to about 0.05 m/s.

10. A method according to claim 1, wherein the total compaction duration is from about 7 seconds to about 60 seconds.

11. A method according to claim 1, wherein compaction is achieved in a single pass of the compactor over the mat.

12. (Amended) A method according to claim 1, comprising two or more separate successive compaction steps by the compaction surface or by two or more separate compaction surfaces which closely follow one another, each of said compaction steps comprising engaging said compaction surface or one of said two or more compaction surfaces with any one portion of the mat for a period of at least 1.5 seconds and of less than about 60 seconds.

13. A method according to claim 1, wherein the average load stress applied through the compaction surface is from about 10 kPa to about 40 kPa.

16. A method according to claim 1, wherein the compactor belt is heated to at least the temperature of the asphalt mat.

17. (Amended) A method according to claim 16, wherein the compactor belt is heated to a temperature in the range of from about 120°C to about 150°C.

18. A method according to claim 16, wherein the compactor belt is heated such that the bitumen on the surface of the asphalt mat substantially does not adhere to the compactor belt during compaction.

20. (Amended) A compactor comprising at least two longitudinally spaced modular compaction units connected relative to each other and a power source for driving at least one of the modular compaction units, wherein at least one of the modular compaction units is adjustable to permit steering of the compactor, and wherein each of said modular compaction units comprises a compaction belt and support means for the belt to define a planar lower run of the belt forming a compaction surface.

23. (Amended) A compactor according to claim 20 wherein in each modular compaction unit the belt extends between two large diameter drums or a single larger diameter drum at the leading end of the respective compaction unit, which is optionally driven, and two smaller drums or rollers respectively defining the upper and lower runs of the belt at the trailing end of the respective compaction unit.

24. (Amended) A compactor according to claim 20 wherein in each modular compaction unit the lower run of the belt extends between two relatively small drums or rollers, and wherein at least one upper roller, which may optionally be larger than the two relatively small drums or rollers, supports and upper run of the belt.

33. (Amended) A method of compacting a mat of hot mix asphalt comprising compacting the mat using a compactor as claimed in claim 20.

REMARKS

Claims 1-13, 16-18, 20, 23-24, and 33 are pending in the application. Claims 14, 15, 19, 21, 22, 25-32 have been cancelled.

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached page is captioned "**Version With Markings to Show Changes Made.**"

Entry of this Preliminary Amendment, and an early examination of the application is earnestly submitted. This Preliminary Amendment embodies the applicant's understanding of changes agreed to with the Examiner in order to place this application in condition for allowance in a telephonic Examiner's Interview on July 2, 2001. Applicant's attorney wishes to express her willingness to engage in a telephone interview to further the status of this application if any further concerns need to be addressed.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

-- CROSS-REFERENCE TO RELATED APPLICATION

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Claims 1, 7, 12, 17, 20, 23, 24, and 33 have been amended as follows:

1. (Amended) A method of compacting a mat of hot mix asphalt which has been laid by an advancing asphalt paver, the method comprising advancing an asphalt compactor over the laid asphalt such that a compaction surface of the compactor, formed by a lower run of at least one belt, is engaged with any one portion of the mat for a period of at least 1.5 seconds

and of less than about 60 seconds, the compaction surface applying a maximum average load stress to the mat of less than about 50 kPa and greater than about 10 kPa.

2. A method according to claim 1, wherein the asphalt compactor is advanced over the laid asphalt substantially at the rate of advancement of the asphalt paver and within about 50 m behind the asphalt paver.

3. A method according to claim 2, wherein the asphalt compactor is advanced substantially at the rate of the asphalt paver within about 2 m behind the asphalt paver.

4. A method according to claim 2 wherein the asphalt compactor is connected to and advanced by the asphalt paver.

5. A method according to claim 2 wherein the distance between the asphalt paver and the asphalt compactor is controlled via relative location sensor means.

6. A method according to claim 2, wherein the asphalt paver travels at a speed of from about 0.05 to about 0.15 m/s.

7. (Amended) A method according to claim 6 ~~9~~ wherein the asphalt paver travels at a speed of about 0.1 m/s.

8. A method according to claim 1, wherein the compactor is displaced over the mat at a rate of no more than about 0.7 m/s.

9. A method according to claim 1 wherein the rate of compaction is from about 0.6 m/s to about 0.05 m/s.

10. A method according to claim 1, wherein the total compaction duration is from about 7 seconds to about 60 seconds.

11. A method according to claim 1, wherein compaction is achieved in a single pass of the compactor over the mat.

12. (Amended) A method according to claim 1, comprising two or more separate successive compaction steps by the compaction surface or by two or more separate compaction surfaces which closely follow one another, each of said compaction steps comprising engaging said compaction surface or one of said two or more compaction surfaces with any one portion of the mat for a period of at least 1.5 seconds and of less than about 60 seconds.

13. A method according to claim 1, wherein the average load stress applied through the compaction surface is from about 10 kPa to about 40 kPa.

16. A method according to claim 1, wherein the compactor belt is heated to at least the temperature of the asphalt mat.

17. (Amended) A method according to claim 16, wherein the compactor belt is heated to a temperature in the range of from about 120°C to about 150°C ~~or more~~.

18. A method according to claim 16, wherein the compactor belt is heated such that the bitumen on the surface of the asphalt mat substantially does not adhere to the compactor belt during compaction.

20. (Amended) A compactor ~~according to claim 19, wherein the~~ comprising at least two longitudinally spaced modular compaction units ~~are pivotally~~ connected relative to each other and a power source for driving at least one of the modular compaction units, wherein at least one of the modular compaction units is adjustable to permit steering of the compactor,

and wherein each of said modular compaction units comprises a compaction belt and support means for the belt to define a planar lower run of the belt forming a compaction surface.

23. (Amended) A compactor according to claim 20 ~~22~~ wherein in each modular compaction unit the belt extends between two large diameter drums or a single larger diameter drum at the leading end of the respective compaction unit, which is optionally driven, and two smaller drums or rollers respectively defining the upper and lower runs of the belt at the trailing end of the respective compaction unit.

24. (Amended) A compactor according to claim 20 ~~22,~~ wherein in each modular compaction unit the lower run of the belt extends between two relatively small drums or rollers, and wherein at least one upper roller, which may optionally be larger than the two relatively small drums or rollers, supports and upper run of the belt.

33. (Amended) A method of compacting a mat of hot mix asphalt comprising compacting the mat using a compactor as claimed in claim 20~~19~~.

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ABSTRACT OF THE DISCLOSURE

Compacting a mat of hot mix asphalt laid by an advancing asphalt paver by advancing an asphalt compactor over the laid asphalt such that a compaction surface of the compactor, formed by a lower run of at least one belt, is engaged with any one portion of the mat for a period of at least 1.5 seconds and less than about 60 seconds, the compaction surface applying a maximum average load stress to the mat of less than about 50 kPa and greater than about 10 kPa. Compaction may be achieved using a compactor with two longitudinally spaced modular compaction units connected relative to each other, and a power source for driving at least one of the modular compaction units.